

The University of Chicago

STUDIES IN
ROMAN PRINTING TYPES OF THE
FIFTEENTH CENTURY

A PART OF A DISSERTATION SUBMITTED
TO THE GRADUATE FACULTY IN CANDIDACY
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

GRADUATE LIBRARY SCHOOL

1931

By
LESTER CONDIT

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I.

Q u

Q u
A

Q u
B

Q u
C

Q u
D

Q u
E

- A. Langer Hakenbogen, in der Mitte der Rundung ansetzend.
 B. Langer flacher Bogen, Ansatz in der Mitte oder undeutlich rechts davon.
 C. Kurzer Bogen von der Mitte, ohne Rücksicht auf die Form.
 D. Kurzer oft strichartiger Bogen von der Mitte schräg abwärts ohne merklich steigende Spitze.
 E. Kurzer Haken oder Bogen, deutlich rechts von der Rundung ausgehend.

Besondere Formen.

Q u
F 1

Q u
F 2

Q u
F 3

Q u
F 4

Q u
F 5

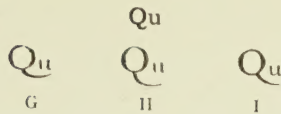
Q u
F 6

Q u
F 7

- F1. Wellig gewundener Bogen von der Mitte.
 F2. Der Bogen setzt links von der Mitte an und verläuft dicht unter und fast parallel zu derselben.
 F3. Greifschwanzartig gewundener Bogen, dessen Spitze sich nochmals nach unten krümmt.
 F4. Mäßig gewundener Bogen, dessen Spitze mehr oder weniger deutlich abgehackt ist.
 F5. Eckig ansetzender Bogen, oft mit verdickter Spitze.
 F6. Stark gekrümmter Bogen mit kurzer, oft verdickter Spitze, rechts ansetzend.
 F7. Die Rundung des Q liegt schräg, so daß die Achse von links unten nach rechts oben verläuft. Der Haken, der anscheinend in der Mitte ansetzt, steht also links von der Achse.

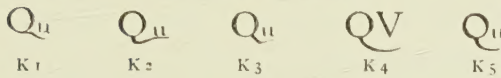
PLATE I.—Haebler's forms of the letter Q





- G. Langer flacher Bogen, Ansatz von der Mitte oder undeutlich rechts davon.
- H. Langer, aber mehr oder weniger runder (nicht flacher) Bogen von der Mitte.
- I. Der Bogen setzt deutlich rechts an der Rundung an und ist deshalb meist weniger lang, als bei den anderen Formen.

Besondere Formen.



- K 1. Wellig gewundener Bogen, ohne Rücksicht auf den Ansatz.
- K 2. Der Bogen setzt hakenförmig an, verläuft aber lang und flach dicht unter der Zeile.
- K 3. Eckig gebrochener Bogen, ohne Rücksicht auf den Ansatz.
- K 4. Das Q ist mit einem Majuskel V anscheinend fest verbunden.
- K 5. Die Rundung liegt schräg, wie bei F 7, aber das u steht über dem Bogen.



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ACKNOWLEDGMENT

The author wishes to express his gratitude to Professor Pierce Butler, who directed this thesis through its various stages of preparation.

INTRODUCTION

If we exclude the many attempts to reproduce type fac-
similes,¹ the pioneer researches in identification of early
imprints may be accredited to Henry Bradshaw,² the well-known
British bibliographer and librarian of the University of
Cambridge, but his work was interrupted by his death in 1886.
It was continued at Oxford by one of his students, Robert
George Collier Proctor, and later by him at the British Museum.³
The crowning result of these investigations was the "Index to
the early printed books in the British Museum," partially com-
pleted at the time of his death in 1903.

Proctor attempted only the identification of typograph-
ical specimens through visual recognition, with measurements of
twenty lines of type. His remarkable memory for type faces is
comparable to that of the professional politician for human

-
1. Konrad Haebler, Handbuch der inkunabelkunde (Leipzig:
K. W. Hiersemann, 1925), p. 19-24.
 2. G. W. Prothero, A Memoir of Henry Bradshaw (London,
1888), summarized in Dictionary of national bio-
graphy, suppl. (New York and London, 1901), I, 251-54.
 3. Robert Proctor, Bibliographical essays (London, 1905),
p. ix-xlvi.

faces and names of individuals. But he apparently made no effort to transmit to others the bases upon which his identifications were made, in readily accessible form and in a systematic manner. Here and there he makes a valuable remark about the resemblance of one type to another, and there is some effort at description and citation of type facsimiles then existing, but much remains to be done. In his measurements he gives the absolute minimum measurement of twenty lines of type.

It was not until 1905, when Dr. Konrad Haebler, later librarian of the Königlische Preussische Bibliothek, Berlin,¹ began the publication of his immortal "Typenrepertorium der Wiegendrucke", that the problem of typographical identification was attacked in a thoroughly scientific manner. As a German, Dr. Haebler's primary interest has been in Gothic printing types, and his interest in the Roman types has been but incidental. In the identification of the Gothic types, he uses the form of the letter M as a basis, as had been previously suggested through Karl Dziatzko and J. P. A. Madden. He has been able to distinguish 101 different forms of that letter used by fifteenth century presses. So successful have been his researches that it is now possible to identify, frequently beyond possibility of a doubt, many specimens from fifteenth century presses. In the case of specimens that are not identifiable

1. Konrad Haebler, "Typenrepertorium der Wiegendrucke," in Sammlung bibliothekswissenschaftlicher arbeiten (Halle a. S.: R. Haupt; Leipzig: O. Harrassowitz, 1905-24), 19-20, 22-23, 27, 29-30 hft.

positively, it is possible to reduce the number of possible printers, and to make a more accurate estimation of the place and the date of publication than would otherwise be possible. His work is truly monumental and has greatly simplified the problem.

Of the nine volumes thus far published, only one has been devoted exclusively to Roman printing types.¹ The use of Roman type during the fifteenth century was very uncommon outside of Italy. As a consultation of the tables of this work will show, less than ten per cent. of the Roman types in use were employed outside of Italy and Spain. In Germany, where Roman letters are still less popular than the German black letter or the Schwabacher type, the problem of identifying Roman type faces is much less acute than that of identifying the Gothic. Much might be said of the shortcomings of the Haebler methods as applied to researches in the Roman type faces, but it would be grossly unfair to criticize him for what he has not attempted to do. He has succeeded in gathering very reliable descriptive data, and in making the identification of a Roman type specimen much easier, but he has made no attempt whatever to demonstrate relationships of types

1. Op. cit., abt. III, 1909. Fortsetzung
in abt. IV, 1922.

of identical or similar design. In the form of the letter Q, the basis of the Haebler tables of Roman type faces, we do have a distinguishing characteristic, important for the purpose of identification, but it does not serve as an indicator of the style or design, as does the letter M in the tables for the Gothic. The letter M can hardly be used as an index factor in the classification of Roman types, because there is so little diversity of design. There are, it is true, three distinct forms of the letter M used in Roman types, but two of these appear so rarely as to make their use as discriminants impracticable. In the absence of the utility of the letter M as an index factor, the letter Q has been employed as a substitute, and it serves as satisfactorily as a substitute can for the genuine. Can a more genuine index factor be found?

The letter Q is not a genuine index factor in that the divergence of Q forms is not an indicator of the original type design. It represents changes that are due, not to the original type designer or type-founder, but rather to the moods and the idiosyncracies of the printer or compositor. First we may find the combined QU or Qu, with the tail of the Q projecting below the u. Later there arises a need of a separate Q, for some purpose or another, and the u is filed off. Later the unusual distance between the Q and the next letter offends the artistic sense of even the printer, and the tail of the Q is amputated. If the artistic sense be acute, the amputated tail may be curled or tapered off, so as to disguise the operation.

It can not be expected that such operations in any printing office be uniformly done. As the Haebler tables themselves attest, many forms of Q prevailed among some fonts of type. Sometimes as many as six different forms may be found within the space of a year or two. We may have thus six different forms of Q which do not represent six distinct forms of type, but which may all be used with only one font. If there are other operations upon the type, such as kerning it down, or using it leaded, the difficulty of identifying it by means of the form of the Q is increased.

Another difficulty that arises from this method of classification is that of recognizing certain examples of Q as belonging definitely to one of the Q forms which Dr. Haebler uses as bases for classifying. Some examples of Q resemble one of these forms as much as another, being intermediate between one form and another. Any placing of them in the one group or another would be arbitrary rather than a representation of their actual appearance. It would be possible, for instance, for the investigator to examine two specimens of the same type, and to regard one as having Haebler's form G of the letter Q, and the other the form J. It would be idle, however, to dwell further upon this difficulty, for the measurement of angles presents a difficulty very similar.

The greatest asset in the use of the Haebler tables is the careful linear measurement of twenty lines of type. And scarcely less valuable are the detailed descriptions of each type face, insofar as details have been ascertainable. Sometimes the supplemental tables, with reference to forms of certain contractions or minuscules, are very helpful.

In order to group together printing types of the same design, there must be an index factor common to all types cast from the same punches. The Gothic majuscules are of artistic design. Variance of form is readily apparent to the eye. The Roman majuscules, however, are more of geometrical design. Variance of form is not always easily distinguished, even by geometrical eyes. Some variations defy measurement, among them the eccentricity of the circles or ellipses of the letters O and Q, that of the chords in the letters B, P, and R, or the tail of Q.

Any observation or measurement, to be effective, must be one that will be little or not at all effected by shrinking or swelling of paper, as lateral measurements are. As Mr. Pollard aptly observes,¹ there are variations of as much as six millimeters in the measurement of twenty lines of type as used by certain printers. There are cases in which the shrink-

1. A. W. Pollard, "Introduction" to the British Museum Catalogue of books printed in the XVth century (London, 1908), I, xix-xxi.

age or swelling vertically is quite out of proportion to the horizontal shrinking or swelling, but these are the exception rather than the rule. In most of the specimens the shrinking or swelling of the paper or vellum is uniform, or the deviation from the uniform is so slight that it will not visibly affect geometrical measurements. The eccentricity of circles or ellipses, the number of degrees in an angle, will remain fairly constant. Only the best specimens have survived the ravages of time, and are to be found in libraries and museums. Among these, there should be little difficulty on this account.

Since the eccentricity of circles and ellipses can not be as easily measured as angles, the angular majuscules may be taken as a basis for indexing and classification. There are available for use the letters A, E, F, H, K, L, M, N, T, V, W, X, Y, and Z. Letters with right angles may be excluded from consideration, as the variance is too slight. The majuscules K, X, and Y appear so rarely in the Latin texts of the fifteenth century that it would not be profitable to use them as a basis. This leaves us as available for measurement the angles of the majuscules M, N, V, A, and Z. The majuscule Z occurs but rarely, but experience has demonstrated that it presents variances that deserve attention. Sometimes it is formed by the use of N in sidewise position; sometimes it is specially designed. Except for the uneven inking, measurement of the angles presents no insurmountable difficulty. This factor, among the smaller types, is not to be under-estimated, but among the text types,

it is rather a negligible factor. The angles formed by the outer edges can be most easily measured.

Measurements can be made by fitting to the outer edges of the diagonal strokes of the letter a protractor, with the angles properly designated. By fitting cardboard or paper to the outer edges, and the zero mark of the protractor to one of the edges, the number of degrees in the angle may be ascertained. Only one angle of a letter need be taken, and the angles selected have been the mid-angle of the letter M, the lower angle of N, the only acute angle of V, the corresponding angle of A, and the angle of Z corresponding to that of N.

The division into sizes presents a problem. Because of the uneven inking, it is not expedient to measure closer than two degrees. Frequently there is a variation of from five to eight degrees because of uneven inking. Where the variation is five degrees or more, the average angular measurement may be used; where it is not more than two and a half degrees, the minimum will serve the purpose. Since protractors are not provided with half-degree measurements, and too many sizes are not desirable, the sizes intermediate between the 0 and the 5, and the 5 and the next 0, have been made in each case 2 points from the 0. That is, sizes between 40 and 50 would be 40, 42, 45, 48, and 50.

Measurements have been taken also of the relative widths of the majuscules H, M, and N; of the relative height

of the upper loops of P, R, and B; and of any noteworthy eccentricity of the majuscules C, G, O, or Q. Not all of these have been incorporated in the results now submitted.

No claim whatever is made that the results thus far accomplished will in any way do more than supplement the material in the "Typenrepertorium." For the majority of type specimens the information given in Dr. Haebler's tables is quite sufficient for identification. But cases do arise in which further information is desirable. Material here brought out may prove desirable in some such cases. Through the citations to published facsimiles, in the tables, it may readily be seen what types remain of which reproductions are not readily available, and in many of these instances, original specimens also have not thus far been available.

These researches embody only investigations which have been made from original specimens available in Chicago libraries. Angular measurements made from facsimiles are cited in the tables, but no attempt has been made to include such observations in the thesis proper, and what has been done along this line is purely tentative. In some few instances there are enough published facsimiles available to make the observations fairly reliable, but not so much so as measurements made from originals in sufficient quantity.

The indices to printers, presses, and types are too voluminous to be given in full in this brief abstract, but specimen pages are herewith reproduced.

I.

INDEX TO PRINTERS AND TYPES.

' M with diagonals suspended from serifs; A capped;
or Z in reverse.

" M with sloping shanks.

[] Measurements supplied from description or facsimile.

Angular measurements. M N V A Z	Printer, press, city, type, dates in use, citations to descriptions and facsimiles.	20 line Measure- ment.	Page.
---------------------------------------	---	------------------------------	-------

ACCURSIUS, Bonus. 13 Milan.
BMC.VI.754. 1478-81.

1. Hb.III.156. WP.241.

BMC.VI.pl.lv.

4. Hb.II.261. WP.242.

[119]
[100]

ACHATES, Leonardus. Padua,
Santorso, 1 Vicenza.

50` 45 45 48

1. Hb.III.72,75. 1473-4.
WP.291.

2. Hb.I.143. 1475.

4. Hb.III.50. 1479.

5. Hb.II.35. 1479.

6. Hb.II.181. 1490-7.

7. Hb.II.444. 1483-91.

WP.316.

105
[101]
[95]
[78]

86

48` 46 45 40 40

48 42 42 40 40

88

115

113

109

ADAM, Joannes.

See POLONIA, Joannes Adam de.

AGNOLO Fiorentino.

See LORENZO & AGNOLO.

AGSTEIN, Leonhard.

See ACHATES, Leonardus.

MANTEGATIUS, Philippus. 23 Milan.

	1490-6. BMC.VI.784.	
55 42 50 42	1. Hb.I.287.	110
	2. Hb.II.146.	[84]
	3. Hb.I.266.	[110]
	6. Hb.I.273.	[110]
		37

MANTHEN, Johann, partner
of COLONIA, Joannes de.

MANUTIUS, Aldus. 134 Venice.

	1494-1500. BMC.V.551, pl. xl.	
45 42 45 40 55	2. Hb.II.483. GFT.1341. Lipp. 59.	
	JPM.II.364,373. Ore. 31,36.	114
	42. Hb.II.355. 1498.	[108]
58 38 50 40	3. Hb.II.355.	108
50 45 45 40	4. Hb.II.95. GFT.1368.	81
52 40 45 40	6. Hb.II.124.	83
52 45 50 45	8. Hb.II.169.	87
55 45 55 45 45	10. Hb.II.106; III.22.	82
52 45 45 45 45	— 1499.	115
		132
		61

MANZOLO, Michele. Treviso.

	57 Venice. 1481.	
50 40 45 40	2. Hb.II.143. BMC.V.315; VI.886,	
	pl. lxx. WP.267.	83
	5. Hb.I.328. BMC.V.315, pl. xxix.	[112]

MARCHANT, Guy. 13 Paris. 1500.

7. Hb.I.113(5); II.196.	[92]
8. Hb.I.28; II.53(5)	[80]

MARLIANO, Jacobus de. 11 Milan.

	1477. BMC.VI.753.	
60`45 50 50'	1. Hb.II.504. TFS.1907.s.	[124]

ZENI de Sancto Urso, Henricus.
See CaZENO, Rigo di.

ZILETUS, Innocens, partner
of ANTIQUARIUS, Felix.

ZUCCHETTA, Bernardino. 116 Florence.
l. Hb.I.66. 1489. [83]

II.

INDEX TO PRESSES NOT KNOWN BY NAME OF PRINTER.

- ' M with diagonals suspended from serifs;
A capped; or Z in reverse.
- ` M with sloping shanks.
- [] Measurements supplied from facsimile or
description.
- Presses designated by name of author or
title of some printed work appear in
upper case letters.

Angular measurements M N V A Z	Press, city, type, dates in use, citations to descriptions and facsimiles.	20 line Measure- ment.	Page.
60 38 45 35	AENEAS SYLVIUS. 1 Albi. 1481. 1. Hb.I.389. TP.28,6. WP.378, 380.	115	22
	ALBO LAPIDE. 1 Zürich. 1500. 1. BMC.III.802, pl. lxxvi. WP. 353A. TFS.1908.b.	[112]	
	ALEXANDER DE VILLA DEI. 1. Hb.II.257(5) WP.336.	[109]	
	ALEXANDER MAGNUS. Stuttgart. 1. Hb.II.276(5)	[103]	

SAMUEL MAROCHITANUS.

Hb.II.452(4)

[114]

SANCTUM MARCUM, Apud.

See (in pt. I) PUCHER, Vitus.

SANT' JACOPO di Ripoli (monastery
press) 3 Florence. 1477-81.

BMC.VI.619-20, pl. xlii.

70 42 45 42 42' 2. Hb.III.401. DeV.34. Orc.72-3.

TFS.1905.q.

[117]

45`45 45 45 45' 3. Hb.I.399. WP.251A.

115

124

40`42 45 42 4. Hb.I.180. WP.252. GfT.1662.

Fum. 135, fig. 40

105

153

70 50 45 45 5. GfT.1663. TFS.1905.r.

[86]

SENECA. [R.1865]

Hb.I.376(5) WP.212.

[114]

SERENIUS. [Bibliofilia xiv.430]

Hb.II.455(5)

[114]

SERVIVS. 5 Milan. 1475.

50 40 50 40 1. BMC.VI.739, pl. lli. WP.232.

Hb.III.106.

[110]

SERVIVS. 1 Viterbo. 1488.

48 40 45 42 1. Hb.II.484. TFS.1902.nn.

GfT.1580.

[115]

EARLY CONSTRUCTION AND DESIGN OF ROMAN TYPE

Of the earliest methods of type founding, too much of what is purported to be known is based upon theory or tradition rather than upon factual evidence. The earliest types extant are six pieces which were recovered from the bed of the river Saone, near Lyons,¹ opposite the site of a fifteenth century printing establishment. These pieces, though much eroded, are of the same height approximately as present day printing types. Through accidents of types being pulled out of the forms by the suction of the inking balls and being pressed into pages and on the paper before the pressman was aware of the accidents, we now have some examples of type profile bodies.¹

Nothing appears to have been written or published during the fifteenth or early sixteenth centuries upon the methods of type founding or casting. The documents relating to the origin of printing at Strasbourg and Mainz would indicate that these represent contributions to the printing arts from the guild of goldsmiths.² Many authorities sustain the tradition that the

1. H. L. Bullen, Nicolas Jensen, printer (San Francisco: J. H. Nash, 1926), p. 2.

2. Leon de Laborde, Debuts de l'imprimerie a Strasbourg (Paris, 1840), p. 40, pl. ii.

processes of construction and design of type were jealously guarded as masters' secrets and could not be communicated except to fellow-members of the guild.

During the years of prefiguration, according to Zedler,¹ the letters were first cut upon punches of wood, and held together by pieces of rawhide or raw gut. Then they were impressed in damp sand, which served for matrices. The metal, heated to liquid state, was then poured into the sand. When the metal cooled, type was produced. The methods attributed to the Venetian printers were based upon the same principles.²

The way in which the type was produced was as follows: the artist first of all cut upon a punch of hard metal a raised form of each letter. The excellence of his fount depended on the skill with which he executed this part of his business; his whole artistic resources were expended to render the form on the punch as perfect as possible. Impressions were taken from these punches in soft metal, and these were called the matrices (matres) or moulds, from which the actual type was founded. The type, by use, might become blunt; the moulds, by use, might lose their clearness of line; but as long as the hard metal punches retained their form intact, the typographer could always renew his fount. Punches lasted a long time. Jenson employed his one set during eleven years of copious work, and they were worth bequeathing to his compare Ugellemyer in 1480. And the punches for the type from which Aldus printed Bembo's Aetna in 1495 lasted sixty years from that date.

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1. Gottfried Zedler, Von Coster zu Gutenberg (Leipzig, 1921), p. 19 (abb. 1).
 2. H. F. Brown, The Venetian printing press (New York, G. P. Putnam's Sons, 1891), p. 1-16.

Just where the first Roman type was designed and cut is not definitely known. It is frequently attributed to Nicolas Jenson, although previous types existed in humanistic or romantic designs. At the monastery of Subiaco, which is usually accorded the honor of having the first Italian press, Roman majuscules were introduced in 1465, Gothic minuscules being retained. Not long afterward, perhaps before, a roman type was used by Adolph Rusch, the R-printer, at Strasbourg. Before Jenson had been long established at Venice, if not before, a roman type was used at or near Augsburg at the monastery of Saints Ulrich and Afra. Other types might be cited which, while predominantly Gothic, show roman tendencies in design. Curiously enough, these types appeared between the years 1462 and 1470, the years of which nothing whatever has been ascertained concerning the life of Jenson. It is quite possible that he was more intimately concerned with the origin of Roman types than it is possible to prove by existing evidence.¹

1. J. P. A. Madden, Lettres d'un bibliographe, 2^e ser., (Versailles: E. Aubert, 1873) II, 121-132.

On the design of Roman letters, much more literature has survived. The inscriptions on the column of Trajan, and other Roman monuments, have in all subsequent ages aroused admiration for their symmetrical design. As early as the Carolingian renaissance, a pilgrim, believed to be a monk in Reichenau, collected upwards of seventy-five inscriptions, forming a little book. During the Italian renaissance the study of Roman inscriptions flourished, as is evidenced by writings of Rienzi, Dondi, Poggio, and Mantegna.¹

One of Mantegna's friends, Felix Felicianus of Verona, to whose own work we shall refer immediately, has left us a charming account of an excursion made by himself and Mantegna. They met one afternoon on the western shore of Lake Garda with other members of an antiquarian society, where they first crowned themselves with myrtle and ivy, and then visited the ruins of a temple of Diana, making copies of the inscriptions they found there. Afterwards they decorated their barque with laurel and left the shore for the islands, the music of the lyre accompanying them to Sirmione where they visited the church of St. Peter to give thanks for a pleasant day. Some twenty-two inscriptions were copied on that day according to the testimony of Felicianus. To Mantegna also was dedicated the collection of inscriptions compiled by Felix Felicianus. But from our point of view greater interest attaches itself to the same scholar's little Codex, preserved in the Vatican Library, describing the forms of inscription letters and dated 1463.

1. Stanley Morison, "Introduction" to A Newly discovered Treatise on Classic Letter Design (Paris, 1927), p. 9-12.

In the principles of letter construction advanced by Felicianus, the letters are drawn upon square fields divided diagonally, diametrically, and otherwise - all in accordance with the nature of the character, whether H, O, M, etc. The cutter standardized the measure of the strokes, thin or thick, related the widths to the heights, and perfected the curves and the circles in C, G, O, and Q.

There has recently been discovered by Leo S. Olschki an early printed treatise on letter construction, attributed to Damianus Moyllus (or De Moyllis) about 1483.¹ It deals with the construction of Roman majuscules only. The designs are quite in conformity with those of Roman printing types at that period, but it appears to have been designed more for use in inscriptions. It is an agreeable post-Jensonian Roman.

A work on letter design by Paccioli, published 1509, is said to have been written also about 1483. It has been asserted by some that he was greatly indebted to his friend, Leonardo da Vinci, for most of his material. By others Piero della Francesca has been mentioned as the source of inspiration.²

-
1. A Newly discovered Treatise on Classic Letter Design, printed at Parma by Damianus Moyllus circa 1480 reproduced in facsimile (Paris, 1927).
 2. Luca Paccioli, Divina proportione (Venice: Paganinus de Paganinis, 1509).

But it may be said that no authoritative work on the design of letters for Roman type appeared during the fifteenth century. The first treatise to include directions for the design of minuscules and majuscules did not appear until 1514, when Fantì's treatise¹ came forth from the press of Joannes Rubeus Verzellensis. One by Vicentino appeared in 1523. Some years later a treatise was published by the noted engraver, Albrecht Dürer.² Much might be said about the symmetry or the lack of proportions of these designs.

By far the most interesting treatise upon letter construction is that of Geoffroy Tory.³ Besides being a wood engraver, a painter, and an university professor, Tory found time to devote himself to letter designing, and is said to have designed the type of the Parisian printer, Henri Etienne. Some of the speculations in this book are even beyond the lawless conceits of his age.⁴

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1. Sigismundo Fantì, Theorica et practica de modo scribendi fabricandique omnes litterarum species (Venice: Joannes Rubeus, 1514).
 2. The construction of Roman letters by Albrecht Dürer (Cambridge, 1924).
 3. Geoffroy Tory, Champ fleury (Paris, 1529).
 4. T. L. DeVinne, Historic printing types (New York, 1886), p. 20-26.

The increased popularity of Roman type through France during the sixteenth century has been attributed to the influence of Tory's treatise. It is extremely doubtful if ever a more entertaining treatise has been published upon the art of letter design. But it is not only a treatise on letter design; it is also written with the purpose of reforming the French orthography. It abounds in quotations from Martianus Capella, and there are copious citations of mythological characters.

His comment upon letter sizes is quite illuminating:¹

So I return to my subject, & say that amongst Attic letters, which are in number twenty-three ... there are some which are broader than the others. For some of them are eleven points in breadth, making ten units, as A, D, H, K, O, Q (without the tail), R, V, X & Y, and these are as broad as they are high ... I, which is our standard and most important letter in making all the others in their due proportions, is but three units broad at the top & three whole ones & two halves at the foot ... M is thirteen units more of breadth than of height. N is eleven units broad; G nine and a half; T eight whole ones and two halves; C nine whole ones; B, seven; E and L, seven and a half; P, seven whole ones; F, six whole ones; S, six less than one fourth. The tail of the Q is four units high, and thirteen long.

1. Geoffroy Tory, Champ fleury, tr. into English and annotated by George B. Ives (New York: Grolier Club, 1927), p. 32.

The letter Q is the only one of all the letters that goes below the lowest line, & I have never been able to find a man who could tell me the reason therefor, but I will tell it & set it down in writing. I have thought & meditated so much on the shape of these Attic letters that I have now discovered that the Q extends below the line because he does not allow himself to be written in a complete word without his trusty comrade & brother V (U), and to show that he wishes to have him by his side, he embraces him with his tail from below ... Priscian, an author¹ of great repute, says in his first book, wherein he treats of the qualities of letters, that Q must always be followed by V to show that the said V loses its force & its found when written before a vowel in the same syllable; but he does not say why it has a tail below the line of all the other letters.¹

As is attested by these early treatises, type design upon geometrical principles was well established, at least by the end of the fifteenth century. It is further attested by the presence in incunabula of well rounded letters, such as O and Q, and the perpendicular shanks in H, M, N and other letters. Of course, there are many instances of the contrary. The inner strokes of the letters M and N are frequently curved slightly, either from design, or from faulty cooling of the metal. Sometimes the letters C, G, O and Q are elliptical rather than circular. Sometimes they are suggestive of free hand cutting.

1. Chapter IV.

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The progress of typographical design year by year during the fifteenth century can not easily be traced with accurate observations, because of the many undated editions and the occasional incorrectly dated edition. Among the presses of the better quality, there are many features that remain constant throughout the century, such as geometrical perfection in the perpendicular and rounded characters. Serifs are present or absent without betraying any pronounced tendencies. There are many forms of Q, but as we have remarked before, many of these are not the result of preconceived design on the part of the type founder, but were brought about by the requirements of the printer. The alterations are of such nature that they could be made at the printing establishment, and the circumstantial evidence would point to the printer rather than to the type designer as the perpetrator of these alterations. Most of them could have been made upon the completed type with a hammer, a file, a chisel, or a saw; and it is not unreasonable to suppose that these tools were available to printers who required them. There are quite a few interesting changes in punctuation marks, such as the gradual substitution of the comma of to-day for the stroke comma, and the evolution of the semi-colon, but these have little bearing upon the general tendencies of typographical design. There is some general tendency toward the narrowing of the widths of majuscules, but this cannot readily be

portrayed in a manner that could be readily grasped.

It can be noted, however, that the narrowing of angular majuscules necessitated the increased acuteness of the angles. When the first edition of Lactantius came forth from Subiaco, we find rather wide majuscules of free-hand Gothic design, but with romanian or humanistic tendencies. In the first type used at Rome by Sweynheym and Pannartz we find M and V with angles of sixty or more degrees. In the type of Wendelin of Speyer, the middle angle of M is reduced to fifty-eight. At the monastery of Saints Ulrich and Afra near Augsburg, it is reduced to fifty-five. Nicolas Jenson brings it down to nearly fifty-two, and Adolf Rusch used an M of approximately fifty. Aldus Manutius reduces the angle to forty-five. Before the close of the century there are real Roman types with angles as acute as forty and some designers attempt to reduce the angle to thirty-eight. To say that the more advanced is the design, the more acute is the angle, would be about as correct as any generalization that could be made.

